



Morphology and medicinal values of a wildy grown medicinal and aromatic herb

Hyptis suaveolens (L.) Poit

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Abstract

The plant *Hyptis suaveolens* (L.) Poit is belonging to the family Lamiaceae, is commonly growing aromatic plant all over the India. It is an aromatic, herbaceous, annual plant with rich medicinal qualities.

The plant includes potential applicability in multifold purposes like for Antimicrobial activity, antimicrobial activity, antioxidant, diarrhea, Preliminary phytochemical screening shows the presence of alkaloid, glycoside, saponin, tannin and flavonoids etc. *Hyptis suaveolens* (L.) Poit is capable to produce numerous seeds at the ending of their life phase per year. Mature seeds are falling down by certain factors such as by air, touch by human or animals etc. These seeds are in resting phase during summer and are showing their wide range of germination when they come to the contact of suitable environmental condition. It develops many small plants just the entry of rainy season which further develop a group in particular ecological areas. Present study is based on their morphological changes followed by the medicinal importance.

Keywords: *Hyptis suaveolens* (L.) poit., van TULSI, herb, medicinal value, aromatic plant

Introduction

Nature includes wide range of resources and is classified as two major category first one is abiotic resources and second one known as biotic resources. Plants, animals and microbial resources are examples of biotic resources in nature. Plants are valuable bio-resources in nature participating role in construction of biological resources in certain ecological areas. These are major source of food, fodder, fuel, medicine etc widely utilized by the peoples over the world. Plants also providing many life requirements to the related living beings associated or near by the plant resources. The roles of plants in nature and among the peoples are of wide range and in multifold directions.

Forests are marked as a rich center of biological diversity including rich composition of bio resources. Dense vegetation is important characteristics of forest. It is not only a major shelter of wide range of bio species but also providing necessary facilities to the bio species for successful regulation of their life pattern and to maintain their existence in nature for long time. These are also performing their valuable role in environmental purification, regulation of natural cycles and for environmental management. Annual rainfall, Seasonal climatic changes, Soil quality, composition of vegetation and presence of bio resources etc are leading aspects directly supported by the presence of plants/forests in natural habitats.

A wide range of forest products gained from a healthy forest such as fruit, fuel, gum, resin, tannin, oil, dye etc. These are further utilized by the local peoples directly or by preparation in varied purpose. There is rich vegetation which is marked for their utilization to treat specified disorders among the human beings such plants are referred as medicinal plants. There is rich diversity in medicinal plants in terms of their habits, habitats, life patten and treatment potential of particular

disorders in human beings. A group of plants producing aroma are known as aromatic plants also marked as medicinal plants due to their efficient capability for treatment of specific disorders. The pattern of treatment of disorders and annual reoccurrence, growth pattern etc are showing variation among the varied medicinal and aromatic plants.

Regeneration tendency among the diverse plants are also variable in nature. For the same purpose numerous amount of the seeds are producing by the plants at the ending of their life phase. It may be seasonally or annually based of the variety of the plants which is supported by the presence of favourable environmental condition. The process is also regulated by the genes in plants. After successful morphological growth plant starts to their reproductive phase by producing flowers. As flowers referred as reproductive structure of the plants including calyx, corolla, androecium and gynoecium. Just after of the successful flowering of the plants there is a urgent need of transfer of pollen from anther to stigma known as pollination. The success of pollination further supporting the process of double fertilization and triple fusion in plants which further leading the formation of seeds in plants. Plants are variable in terms of seed production time and number. Seeds are showing diversity in term of their size, shape, colour, weight etc. After developing seeds plants disseminate them aimed for wide range of dispersal of their species composition in natural habitat. Plants are well adapted in seed dispersal mechanisms. The rate of seed germination, time etc is also found changeable among the plant diversity. A healthy seed in the presence of better climatic condition starts to grow by forming radical and plumule which are further developing different plant parts. Radicle is developing root system of the plants where as plumule converting in to shoot system of the developing plants.

Natural products are a major and significant bio resource of traditional herbal medicine effective for primary health care among the human society. It is reported that the major components in compositions in *Hyptis suaveolens* (L.) Poit are cineole, sabinene, β -caryophyllene, limonene and β -phellandrene depending on the presence of the plant in varied ecological areas.

Hyptis suaveolens (L.) Poit is a naturally growing rich aromatic plant with efficient medicinal potential found to be useful in various disorders. The plant is commonly known as vilayati tulsi widely distributed in different parts of the India like near roads, railway lines nearby area, open areas etc. The main source of this plant from wild. Plants have always served as food, fodder, fuel and medicine etc for human beings from long ago. The medicinal potentials are attributed by phytochemicals present in different plant parts. Annual reoccurrence of the aromatic plant *Hyptis suaveolens* (L.) Poit. Including their morphology as well as medicinal potentials are assessed.

Abagli and Alavo 2011^[1] analyzed essential Oil from Bush Mint, *Hyptis suaveolens*. Ahmad *et al.* 2013^[2] studied in Vitro Antioxidant and Antimicrobial Activity of Methanolic root Extracts of *Hyptis suaveolens*. Ahmed *et al.* 1994^[3] noticed composition of leaf oil of *Hyptis suaveolens* (L.) Poit. Alok *et al.* 2010^[4] focused on in-vitro evaluation of antioxidant activity of leaves of *Hyptis suaveolens* (L.) Poit. Arivoli and Tennyso 2011^[5] studied on Mosquitocidal activity of *Hyptis suaveolens* (L.) Poit (Lamiaceae) extracts against aedes aegypti, anopheles stephensi and *Culex quinquefasciatus* (diptera: culicidae). Asekun *et al.* 1999^[6]. Antimicrobial activity of the essential oil of *Hyptis suaveolens* leaves. Ayange *et al.* 2015^[7] recorded the Effect of Dried Leaves Extract of *Hyptis suaveolens* on Various Stages of Mosquito Development in Benue State. Bobbo *et al.* 2016^[8] Assessed on Larvicidal Activity of *Hyptis suaveolens* and *Balanites aegyptiaca* Leaves and Root Extracts against Mosquito Species.

Chatri *et al.* 2014^[9] analyzed chemical Components of Essential Oils of the Leaves of *Hyptis suaveolens* (L.) Poit. Chitra *et al.* 2009^[10] studied on wound healing activity of *Hyptis suaveolens* (L.) Poit (Lamiaceae). Danmalam *et al.* 2009^[11] analyzed acute toxicity studies and hypoglycemic activity of the methanol extract of the leaves of *Hyptis suaveolens* Poit. Das *et al.* 2009^[12] analyzed phytochemical and pharmacological investigation of the protective effect of plant *Hyptis suaveolens*. Devi 2015^[13] reviewed on the pharmacology and phytochemistry of folklore medicinal plant *Hyptis suaveolens* (L.) Poi. Edeoga *et al.* 2006^[14] studied on chemical composition of *Hyptis suaveolens* and *Ocimum gratissimum* hybrids from Nigeria. Gavani and Paarakh 2008^[15] focused on antioxidant activity of *Hyptis suaveolens* (L.) Poit. Grassi *et al.* 2006^[16] studied on anti-inflammatory activity of two diterpenes of *Hyptis suaveolens*.

Gunasekaran *et al.* 2015^[17] recorded on Mosquito larvicidal activity of *Hyptis suaveolens* (L.) Poit (Lamiaceae) aerial extracts against the filarial vector *Culex quinquefasciatus* Say (Diptera: Culicidae). Agarwal and Varma 2013^[18] focused on antioxidant activity and Phytochemical analysis of *Hyptis suaveolens* (L.) Poit. Essential oil of *Hyptis suaveolens* (L.) Poit. from Tanzania: Composition and Antifungal Activity

was recorded by Malele *et al.* 2003^[19]. Mandal *et al.* 2007^[20] studied on antimicrobial activity of the leaf extracts of *Hyptis suaveolens* (L.) Poit. Essential oil from the *Hyptis* genus: A review made by McNeil *et al.* 2011^[21]. Misra *et al.* 1983^[22] analyzed natural triterpene acid from *Hyptis suaveolens*. Mozhiyarasi and Anuradha 2016^[23] studied on phytochemical analysis and antimicrobial activity of *Hyptis suaveolens* (L.) Poit. Antioxidant and Antimicrobial Activities of *Hyptis suaveolens* Essential Oil recorded by Nantitanon Shaikat *et al.* 2007^[24].

Ngozi *et al.* 2014^[25] studied on the Efficacy of *Hyptis Suaveolens*: A Review of Its Nutritional and Medicinal Applications. Okonogi *et al.* 2005^[26] studied on antimicrobial Activity and Pharmaceutical Development of Essential Oil from *Hyptis Suaveolens*. Pandey *et al.* 1982^[27] studied on fungitoxic and phytotoxic properties of the essential oil of *Hyptis suaveolens*. Chemical composition of the essential oil of *Hyptis suaveolens* was done by Peerzada 1997^[28]. Raja *et al.* 2005^[29] recorded the efficacy of *Hyptis suaveolens* against lepidopteron pests. Rajarajan *et al.* 2014^[30] made antifungal and Phytochemical Screening of *Hyptis suaveolens* (L.) Poit. Lamiaceae on Aflatoxin Producing Fungi. Antimicrobial on the extract of *Cocculus hirsutus* Linn. And *Hyptis suaveolens* Poit. Was made by Satish *et al.* 2010^[31]. Phytochemical Screening and Antidiarrhoeal Activity of *Hyptis suaveolens* was done by Shaikat *et al.* 2012^[32]. Sharma *et al.* 2015^[33] analyzed on chemical Characterization and Antioxidant Activity of Essential Oil from the Aerial parts of *Hyptis suaveolens* (L.) Poit.

Sharma *et al.* 2013^[34] studied on *Hyptis suaveolens* (L.) Poit: A Phyto-pharmacological review. Shenoy *et al.* 2009^[35] focused on wound healing activity of *Hyptis suaveolens* (L.) Poit (Lamiaceae). Anti-inflammatory and free radical scavenging studies of *Hyptis suaveolens* (Labiatae) was made by Shenoy and Shirwaikar 2002^[36]. Singh *et al.* 1992^[37] studied on fungi toxic activity of the volatile oil of *Hyptis suaveolens*. Syamasunda *et al.* 2012^[38] recorded on variations in volatile oil compositions of different wild collections of *Hyptis suaveolens* (L.) Poit from Western Ghats of India. Repellent and Insecticidal Activities of *Hyptis suaveolens* (Lamiaceae) Leaf Essential Oil against Four Stored-grain Coleopteran Pest was done by Tripathi and Upadhyay 2009^[39].

Material and Methods

Planned morphological variations assessment on the wild aromatic plant *Hyptis suaveolens* (L.) Poit has been done followed by their medicinal properties with the help of available literatures. Related images were taken and are arranged properly as per its relevance.

Result and Discussions

Hyptis suaveolens (L.) Poit is commonly known as American Mint, Bush mint, Pignut, vilaiti tulsi etc. It is an annual, erect, herbaceous and aromatic plant. Height up to around 7 feet. It includes tap root system. The plant includes quadrate hairy stems, branched, grooved and hollow at middle portion of the stem. 4-angle stem present marked with strong furrows and around 3 cm in diameter having small erect glandular hairs. Leaves are petiolate, simple, opposite and decussate, ovate in

shape, acute at the apex around 5 cm long and 4 cm broad. Leaf margin dentate, hairy with presence of aroma. Leaf petiole is around 3 cm long. Flowers are purple-blue/violet-blue in colour. 2 to 5 flowers appearing in small cyme. The calyx around 5 mm long, corolla around 2 mm long.

Fruit oblong or ovoid, black-brown in colour around 10 mm long and 2 mm wide. These are blue-violet in colour, 2-lipped, about 8 mm long, with a limb 5 mm in diameter. The flower has 4 stamens. Short bilobed stigma present. The plant is capable to produce numerous seeds showing rich germination capacity during of rainy season. Many pollinators participating role in pollination process hence the plant become success to produce numerous seeds. Flowering and Fruiting time is between September-April. The plant starts their life in starting of manson rains.

As per literatures the plant includes essential oils, alkaloids, saponins, flavonoids, terpenes, phenolic compounds, suaveolic acid, suaveolol, methyl suaveolate, β -sitosterol, β - sitosterol, glycoside, Oleanolic acid and ursolic acid etc. Essential oil

from leaf extract of this plant including β Caryophyllene (7.31-36.57%), sabinene (1.50-20.76%), terpinolene (0.11-16.19%), bergamotol (0.83-7.70%), abietatriene (0.18-7.24%), and β -pinene (0.52-6.40%) were identified as the major components.

Medicinal Values

It is an ethnobotanically important medicinal plant. Almost all parts of this plant are being used in traditional medicine to treat various diseases like theplant is considered to be stimulant, carminative. A decoction of the roots is valued as an appetizer. This plant is also used for affections of the uterus. A decoction of the root used in rheumatism, Leaves are used to prepare a mint-flavoured tea, essential oils, stomach problem, Fever, Cold, skin disorders, anti-inflammatory, Fungal infection, antirheumatic, burn, boil, wounds, headache, antibacterial, Rheumatism, Analgesic, Insecticidal Effect, Tumor, as a stimulant and Larvicidal Effect etc.

Hyptis suaveolens (L.) Poit. – Various Plant Parts



Fig 1: *Hyptis suaveolens* (L.) Poit.: Plant body



Fig 2: *Hyptis suaveolens* (L.) Poit.: Stem with hairs



Fig 3: *Hyptis suaveolens* (L.) Poit.: Flowers



Fig 4: *Hyptis suaveolens* (L.) Poit.: Mature Plant/ Fruits

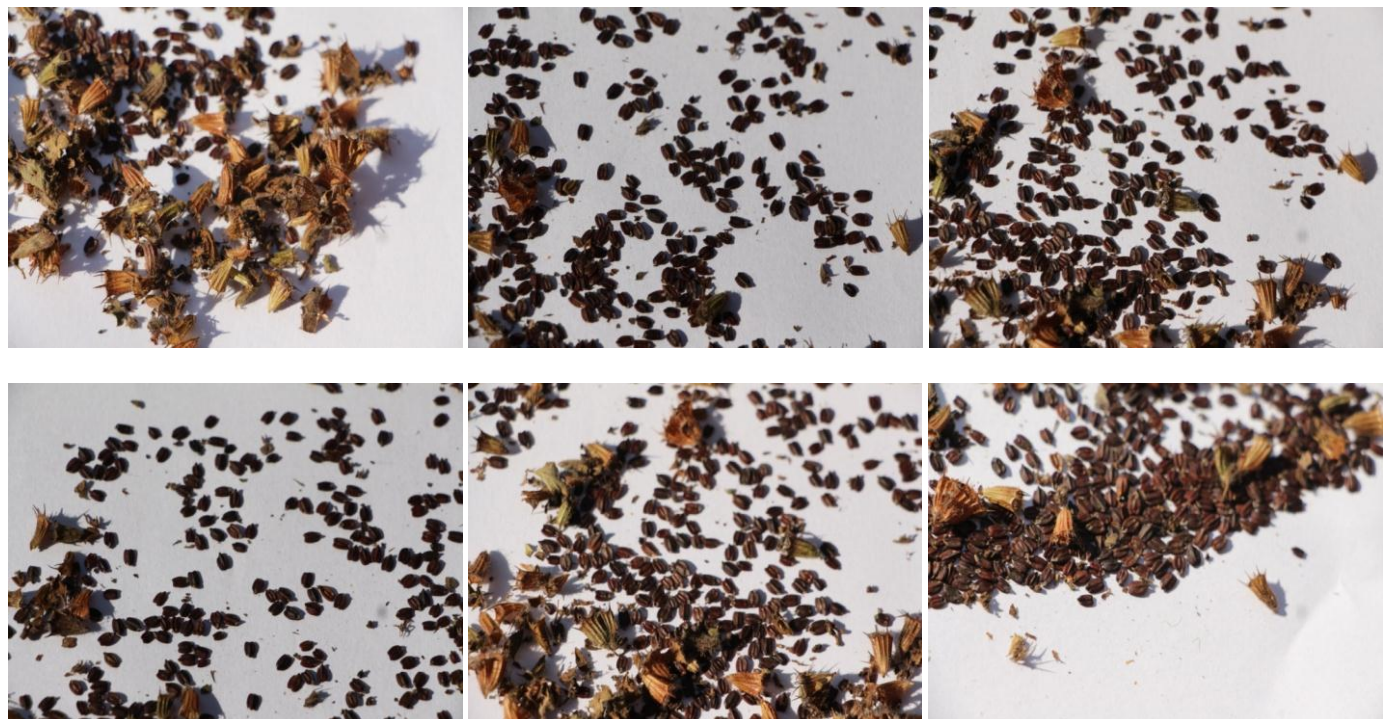


Fig 5: *Hyptis suaveolens* (L.) Poit: Seeds

Conclusions

Natural products have been utilizing in multifold directions including for medicinal purpose using various plant species. *Hyptis suaveolens* (L.) Poit producing many seeds at the ending of their life per year. These seeds are showing rich potential to germinate in support of suitable environmental condition. Seed dispersal takes place by several modes like by air, water etc.

The plant includes efficient potential for treating various disorders. It is using in many health problems since a long ago. The current study focus on generating interest in wide range for further planning as well as promoting research on this multipurpose aromatic plant.

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